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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/717,413

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Thorsten Schedel

P2002,0978

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07/24/2006

LERNER GREENBERG STEMER LLP

P O BOX 2480

HOLLYWOOD, FL 33022-2480

EXAMINER

AKANBI, ISIAKA O

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 07/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary****(SUPPLEMENTAL)**

Application No.

10/717,413

Applicant(s)

SCHEDEL ET AL.

Examiner

Isiaka O. Akanbi

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 7 and 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 9-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Supplemental Action***

This is a supplementary official action in response to attorney's request to clarify the final official action.

### ***Drawings***

The examiner approves the drawings filed 20 March 2006.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 3, 4, 5-6 and 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Kaneko et al. (6,411,387 B1). The reference of Ina discloses the features of the claimed as follows:

As regard to claim 1, Kaneko discloses a method for adjusting a substrate in an exposure appliance (10) used for transferring a structure to the substrate (W), the appliance including a moving chuck (28) for aligning the substrate, a radiation source (30a), and at least one focusing device (32) comprising of the following (fig.1):

for at least one first position on the chuck (28), obtaining a measured discrepancy by measuring any discrepancy between a surface of the chuck and an idealized plane indirectly by measuring discrepancies between a surface of a highly planar test substrate and an idealized plane, using at least one focus/tilt sensor (34/26) in an exposure appliance(col. 8, line 43-48)(col. 9, line 63-col. 10, line 1-4), providing the substrate(1), which is covered with a photosensitive layer (col. 5, line 2-3), fixing the substrate on the chuck such that the surface of the chuck faces and the substrate and the chuck contacts the substrate (col. 9, line 9-12)(fig. 1), selecting a first detail from a plurality of details in the photosensitive layer, the first detail

representing a first exposure area on the substrate, the selecting step including defining a projected first position by projecting the first position on the chuck into the photosensitive layer and selecting the first detail such that the projected first position is located within or near the first detail (col. 9, line 63-col. 10, line 1-4); obtaining a predetermined focus distance by predetermining a common focus distance intended for the plurality of details on the substrate (col. 5, line 47-53), calculating a first correction for the predetermined focus distance between the first detail on the substrate and the focusing device as a function of the measured discrepancy at the first position (col. 5, line 37-41) and applying the first correction to the focus distance by moving the chuck for adjusting the substrate in an exposure step for the first exposure area (col. 5, line 41-60) (col. 6, line 1-12).

As to claim 2, according to claim 1, Kaneko discloses measuring discrepancies for at least one second position on the chuck (col. 3, line 29-37)(col. 10, line 9-14) (col. 12, line 1-15), selecting a second detail on the substrate, the selecting step including defining a projected second position by projecting the second position on the chuck into the photosensitive layer and selecting the second detail such that the projected second position is located within or near the second detail, calculating a second correction for the predetermined focus distance as a function of the measured discrepancies at the second position, and for adjusting the substrate in a further exposure step, repeatedly applying the second correction for a second exposure area, the first correction and the second correction being different (col. 5, line 13-60)(col. 6, line 1-12).

As to claims 3 and 4, Kaneko discloses wherein the first correction includes compensating for any tilt that is measured from the measured discrepancy at two or more first positions (col. 3, line 29-37)(col. 6, line 40-43) (col. 6, line 66-col. 7, line 1-5).

As to claim 5, Kaneko discloses individually repeating steps for adjusting the focus distance for all of the plurality of details in the photosensitive layer on the substrate, each of the plurality of details representing an exposure area for carrying out an exposure step (col. 3, line 29-37)(col. 11, line 7-21)(col. 11, line 32-40).

As to claim 6, Kaneko discloses storing a plurality of measured and discrepancies in a databank, and calculating corrections to a plurality of focus distances and tilts in the plurality of details for a plurality of substrates as a function the plurality of measured discrepancies at each position associated with the plurality of details (col. 3, line 29-37)(col. 10, line 16-33).

As to claim 10, Kaneko discloses calculating a common tilt from an average of a plurality of measured tilts in the plurality of details, each of the plurality of tilts being ideal for exposure (col. 3, line 29-37)(col. 19, line 33-34).

Regarding claims 11 and 12, Kaneko discloses a method for adjusting a substrate in an exposure appliance (10) used for transferring a structure to the substrate (W), the appliance including a moving chuck (28) for aligning the substrate, a radiation source (30a), and at least one focusing device (32) comprising of the following (fig.1):

for at least one first position on the chuck, obtaining a measured discrepancy by measuring any discrepancy between a surface of the chuck and an idealized plane (col. 8, line 43-48)(col. 10, line 55-62), providing the substrate, which is covered with a photosensitive layer (col. 5, line 2-3), on the chuck such that the surface of the chuck faces the substrate (col. 6, line 57-59), selecting a first detail from a plurality of details provided for measuring an ideal focus distance in the photosensitive layer, the first detail representing a first exposure area on the substrate, the selecting step including defining a projected first position by projecting the first position on the chuck into the photosensitive layer and selecting the first detail such that the projected first position is located within or near the first detail, setting a predetermined limit value for a permissible discrepancy, comparing the measured discrepancy with the predetermined limit value, as a function of the comparing step, excluding/not considering a detail from the plurality of details provided for measuring the ideal focus distance in the photosensitive layer (col. 6, line 54-col. 7, line 1-5), obtaining a measured ideal focus distance by measuring a focus distance being ideal for exposure in at least one further detail from the plurality of details, and moving the chuck to adjust the substrate to the measured ideal focus distance for illuminating the first exposure area (col. 8, line 21-48), and based on at least one further adjustment mark, moving the chuck to adjust the substrate in a direction at right angles to a direction of a focus distance for illuminating the first exposure area (col. 8, line 21-48).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (6,411,387 B1)

As to claim 9, Kaneko provides a plurality of measured focus distances in the plurality of details (col. 13, line 9-15), however the reference of Kaneko is silent regarding calculating a common focus using an average of a plurality of measured focus distances. The reference of Kaneko discloses in another embodiment (fig. 7) calculating a common tilt from an average of a plurality of measured tilts in the plurality of details (col. 19, line 33-34). It would have been obvious to one having ordinary skill in the art at the time of invention to calculate the common focus distance from an average of a plurality of measured focus distances for the purpose of providing a more accurate measurement.

### ***Additional Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references listed in the attached form PTO-892 teach of other prior art method for adjusting a substrate in an exposure appliance that may anticipate or obviate the claims of the applicant's invention.

### ***Response to Arguments***

Applicant's arguments/remarks, see pages 15-25, filed 20 March 2006, with respect to cited references have been fully considered, the examiner disagrees with the applicant arguments that Kaneko<sup>is</sup> silent about using focus/tilt sensors for determining discrepancies of the chuck surface with respect an idealized plane. The reference of Kaneko discloses using focus/tilt sensors (i.e. interferometer)(col. 2, line 14-22)(col. 6, line 62-64) for determining discrepancies (i.e. displacement characteristic of the stage) of the chuck surface with respect an idealized plane (col. 2, line 50-60). As to applicant arguments that Kaneko does not show fixing the substrate on the chuck such that the surface of the chuck faces and the substrate and the chuck contacts the substrate, and obtaining a measured discrepancy by measuring any discrepancy between a surface of the chuck and an idealized plane indirectly by measuring discrepancies between a surface of a highly planar test substrate and an idealized plane, the examiner further disagrees with the applicant arguments. The reference of Kaneko shows

material piece/wafer is held on the holder (28)(i.e. chuck)(fig. 1)(col. 9, line 9-12)(col. 10, line 3-4) that is use for obtaining a measured discrepancy by measuring any discrepancy between a surface of the chuck and an idealized plane indirectly by measuring discrepancies between a surface of a highly planar test substrate and an idealized plane (col. 10, line 3-4). Additionally, as to applicant arguments that Kaneko does not show setting a predetermined limit value for a permissible discrepancy, comparing the measured discrepancy with the predetermined limit value, and as a function of the comparing step, excluding a detail from the plurality of details provided for measuring the ideal focus distance in the photosensitive layer, the examiner disagrees with the applicant arguments. The reference of Kaneko discloses setting a predetermined limit value for a permissible discrepancy, comparing the measured discrepancy with the predetermined limit value, and as a function of the comparing step, excluding a detail from the plurality of details provided for measuring the ideal focus distance in the photosensitive layer (col. 4, line 49-67)(col. 6, line 44-col. 7, line 1-5).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

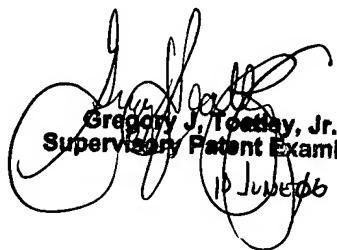
### **Fax/Telephone Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isiaka Akanbi whose telephone number is (571) 272-8658. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on (571) 272-2059. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isiaka Akanbi  
June 10, 2006

  
Gregory J. Toatley, Jr.  
Supervisory Patent Examiner  
10 June 06